ABSTRACT

A novel method and apparatus for improving transmit antenna weight tracking using channel vector element to element correlations in a wireless communication system is disclosed. The present channel autocorrelation tracking technique utilizes the observation that tracking can be improved when a channel gain vector contains correlated elements. In a first embodiment of the autocorrelation tracking technique, the present invention extracts a coarse gradient estimate by utilizing a perturbation vector autocorrelation matrix estimate and a perturbation autocorrelation matrix to update TxAA weight vectors accordingly. In a second embodiment of the channel autocorrelation tracking technique, the present invention extracts a coarse gradient estimate by utilizing eigendecompositions, perturbation vector autocorrelation matrix estimates, and perturbation autocorrelation matrices to update TxAA weight vectors accordingly. In a third embodiment of the channel autocorrelation tracking technique, the present invention reduces the phase change that can occur at receivers.